

Listing of the Claims

This Listing of the Claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) A MOSFET transistor structure formed in a substrate of semiconductor material having a first conductivity type; the MOSFET transistor structure comprising:

an active region of the substrate, the active region having a substantially rectangular perimeter;

perimeter isolation dielectric material formed in the substrate along the entire substantially rectangular perimeter of the active region to define a continuous [sidewall] substantially rectangular interface between the isolation dielectric material and the active region;

spaced-apart source and drain regions having a second conductivity type opposite the first conductivity type formed in the active region to define a substrate channel region therebetween, both the source region and the drain region also being spaced-apart from the [sidewall] substantially rectangular interface; and

a conductive gate electrode that includes a first portion that extends over the substrate channel region and the second portion that extends continuously over the entire [sidewall] substantially rectangular interface between the isolation dielectric material and the active region, the conductive gate electrode being separated from the substrate channel region by intervening gate dielectric material.

2. (Original) A MOSFET transistor structure as in claim 1, and wherein the perimeter isolation dielectric material comprises silicon dioxide.

3. (Original) A MOSFET transistor structure as in claim 1, and wherein the conductive gate electrode comprises polysilicon.

4. (Original) A MOSFET transistor structure as in claim 1, and wherein the gate dielectric material comprises silicon dioxide.

5. (Original) A MOSFET transistor structure as in claim 1, and wherein the first conductivity type is P-type.

6. (Currently Amended) A MOSFET transistor structure as in claim 1, and wherein both the source region and the drain region are spaced-apart from the [sidewall] substantially rectangular interface by about 1000-5000 Angstroms.

7. (Currently Amended) A method of forming a MOSFET transistor structure in a substrate of semiconductor material having a first conductivity type, the method comprising:

forming isolation dielectric material in the substrate such that the isolation dielectric material defines [an] a substantially rectangular active region of the substrate, the isolation dielectric material being formed along the entire perimeter of the active region to define a continuous [sidewall] substantially rectangular interface between the isolation dielectric material and the active region;

forming a layer of gate dielectric material that extends over the active region and over the continuous [sidewall] interface between the isolation dielectric material and the active region;

introducing dopant material into the active region to define spaced-apart source and drain regions having a second conductivity type opposite the first conductivity type and defining a substrate channel region therebetween, both the source region and the drain region being spaced-apart from the [sidewall] interface; and

forming a conductive gate on the gate dielectric material, the conductive gate including a first portion that extends over the substrate channel region and a second portion that extends continuously over the entire [sidewall] interface between the isolation dielectric material and the active region, the conductive gate electrode being separated from the substrate channel region by intervening dielectric material.

8. (Original) A method as in claim 7, and wherein the both the source region and the drain region are formed to be space-apart from the sidewall interface by about 1000-5000 Angstroms.